

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility of a recording apparatus, and control means for determining compatibility of ink based on the data in the storage means and executing print operation, wherein

if compatibility to an ink cartridge cannot be confirmed when the ink cartridge is mounted, the recording apparatus generates a caution and ~~always~~ awaits input of ~~an~~ one of a continuation instruction and a cartridge replacement instruction by a user before the recording apparatus executes a subsequent print operation, ~~and after said caution is generated~~

if the recording apparatus executes the subsequent print operation upon input of the continuation instruction by the user, the recording apparatus generates the caution again after a predetermined amount is printed.

2. (original): The ink jet recording apparatus as claimed in claim 1, wherein the caution is generated each time a predetermined amount is printed.

3. (currently amended): The ink jet recording apparatus as claimed in claim 1, wherein if a cartridge replacement instruction is entered after the compatibility ~~is confirmed to~~ the ink cartridge cannot be confirmed, the ink cartridge is moved to an ink cartridge replacement position.

4. (currently amended): An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data; and update storage means ~~and control means for driving the recording head based on the data in the storage means~~, the recording apparatus further comprising:

default data storage means storing default data for controlling the recording head; and
print control means, which reads the data from the storage means of the ink cartridge to determine compatibility when the ink cartridge is mounted, which, if compatible, stores the data read from the storage means of the ink cartridge in the update data storage means and controls the ink jet recording head based on the data in the storage means of the ink cartridge, ~~and~~ which, if incompatible and data is available from the update data storage means, executes print operation based on the data available from the update storage means, and which if incompatible and no data is available from the update data storage means, executes print operation based on the data in the default data storage means.

5. (original): The ink jet recording apparatus as claimed in claim 4, further comprising rewritable update data storage means, wherein the print control means is provided, which reads the data from the storage means of the ink cartridge to determine the compatibility

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when the ink cartridge is mounted, which, if compatible, updates data in the update data storage means based on the data in the storage means of the ink cartridge and controls the ink jet recording head based on the data in the storage means of the ink cartridge, and which, if incompatible, executes the print operation based on the data in the update data storage means or the data in the default data storage means.

6. (canceled).

7. (currently amended): ~~The ink jet recording apparatus as claimed in claim 6,~~ An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, and control means for determining compatibility of ink based on the data in the storage means and executing print operation, comprising:

optimum drive condition storage means storing an optimum drive condition for an ink cartridge, compatibility of which can be confirmed;

setup range storage means storing normal setup range data for comparison with ink information in the storage means of an ink cartridge;

general-purpose drive condition storage means storing a general-purpose drive condition for making it possible to reliably print even with an ink cartridge, compatibility of which cannot be confirmed; and

a determination section which compares ink information read from the storage means of an ink cartridge with the normal setup range data, and executes printing using the optimum drive

condition if the ink information is within the normal setup range, and executes printing using the general-purpose drive condition if the ink information is out of the normal setup range,

wherein the general-purpose drive condition is set such that pressure for ejecting an ink droplet from the recording head is set larger than the optimum drive condition and that the record paper feed speed is set lower than the optimum drive condition.

8. (currently amended): ~~The ink jet recording apparatus as claimed in claim 6,~~ An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, and control means for determining compatibility of ink based on the data in the storage means and executing print operation, comprising:

optimum drive condition storage means storing an optimum drive condition for an ink cartridge, compatibility of which can be confirmed;

setup range storage means storing normal setup range data for comparison with ink information in the storage means of an ink cartridge;

general-purpose drive condition storage means storing a general-purpose drive condition for making it possible to reliably print even with an ink cartridge, compatibility of which cannot be confirmed; and

a determination section which compares ink information read from the storage means of an ink cartridge with the normal setup range data, and executes printing using the optimum drive condition if the ink information is within the normal setup range, and executes printing using the general-purpose drive condition if the ink information is out of the normal setup range,

wherein a plurality of the general-purpose drive conditions are provided so that reliable printing can be executed in association with the number or ratio of incompatible pieces of the attention ink information read from the storage element with respect to the normal setup range data.

9. (currently amended): An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, and control means for determining compatibility of ink based on the data in the storage means and executing print operation, wherein

when the recording head is to be filled with ink after an ink cartridge is mounted, the control means determines compatibility of the ink cartridge based on the data from the storage means, and outputs data used as a guide for determining a compatible ink cartridge if it is determined that the ink cartridge is incompatible,

wherein the data used as a guide is at least one of (1) displayed on an operation panel of the ink jet recording apparatus and (2) outputted to a display of a host computer, and

wherein the user guide data includes at least one of an address and a telephone number which a user can use to order or buy the compatible ink cartridge.

10. (original): The ink jet recording apparatus as claimed in claim 9, wherein the compatibility is compatibility to the recording apparatus.

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11. (currently amended): An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, and control means for determining compatibility of ink based on the data in the storage means and executing print operation, wherein

if the ink cartridge is determined as being incompatible, the control means outputs data used as a guide for determining a compatible ink cartridge,

wherein the data used as a guide is at least one of (1) displayed on an operational panel of the ink jet recording apparatus and (2) outputted to a display of a host computer, and

wherein the user guide data includes at least one of an address and a telephone number which a user can use to order or buy the compatible ink cartridge.

12. (original): The ink jet recording apparatus as claimed in claim 11, further comprising means for determining a record medium loaded to the recording apparatus.

13. (original): The ink jet recording apparatus as claimed in claim 11 or 12, wherein the compatibility is compatibility to the recording apparatus and record medium.

14. (previously presented): The ink jet recording apparatus as claimed in claim 11, wherein the control means determines the compatibility of the mounted ink cartridge based on the data from the storage means when the mounted ink cartridge is to be replaced, and the control means outputs data for specifying that the mounted ink cartridge is compatible.

15. (currently amended): A method of determining compatibility of ink based on data stored in storage means of an ink cartridge for supplying ink to a recording head of an ink jet recording apparatus, the method comprising:

generating a caution and awaiting input of one of a continuation instruction and a cartridge replacement instruction by a user before executing a subsequent print operation if compatibility to an ink cartridge cannot be confirmed when the ink cartridge is mounted; and
generating the caution again after a predetermined amount is printed if the recording apparatus executes the subsequent print operation upon input of the continuation instruction by the user
~~always awaiting input of an instruction by a user before executing a subsequent printing operation, after said caution is generated.~~

16. (currently amended): A method of controlling an ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data and update storage means, comprising the steps of:

reading data from the storage means of the ink cartridge to determine compatibility of the ink cartridge when the ink cartridge is mounted to the recording apparatus;

storing the data read from the storage means of the ink cartridge in the update storage means and controlling the ink jet recording head based on the data in the storage means of the ink cartridge if the ink cartridge is compatible; ~~and~~

executing print operation based on the data available from the update storage means if the ink cartridge is incompatible and data is available from the update storage means; and

executing print operation based on data stored in default data storage means if the ink cartridge is incompatible and no data is available from the update storage means.

17. (currently amended): A method of controlling an ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, the method comprising:

comparing ink information read from the storage means with normal setup range data;

executing print operation using optimum drive condition if the ink information is within the normal setup range; and

executing print operation using general-purpose drive condition if the ink information contains information out of the normal setup range;

wherein the general-purpose drive condition is set such that pressure for ejecting an ink droplet from the recording head is set larger than the optimum drive condition and that the record paper feed speed is set lower than the optimum drive condition.

18. (currently amended): A method of controlling an ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, the method comprising:

determining compatibility of the ink cartridge based on the data from the storage means when the recording head is to be filled with ink after the ink cartridge is mounted; and

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outputting data used as a guide for determining a compatible ink cartridge if the ink cartridge is incompatible;

wherein the data used as a guide is at least one of (1) displayed on an operation panel of the ink jet recording apparatus and (2) outputted to a display of a host computer, and

wherein the user guide data includes at least one of an address and a telephone number which a user can use to order or buy the compatible ink cartridge.

19. (currently amended): A method of assisting a user to determine a compatible cartridge, the method comprising the steps of:

checking data of a first ink cartridge to determine compatibility of the first ink cartridge;

outputting data used as a guide for determining a compatible, second ink cartridge if compatibility of the first ink cartridge cannot be determined;

wherein the data used as a guide is at least one of (1) displayed on a display of a host computer and (2) displayed on a display of a recording apparatus, and

wherein the user guide data includes at least one of an address and a telephone number which a user can use to order or buy the compatible ink cartridge.

20. (previously presented): The ink jet recording apparatus of claim 4, wherein the default data includes data relating to a print medium feeding speed.

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21. (previously presented): The ink jet recording apparatus as claimed in claim 9, wherein the user guide data is displayed when an ink cartridge is newly mounted and before the ink jet recording head is filled with ink.

22. (previously presented): The ink jet recording apparatus as claimed in claim 9, wherein the user guide data includes contact addresses and telephone numbers of dealers of compatible ink cartridges.

23. (previously presented): The ink jet recording apparatus as claimed in claim 9, wherein the user guide data is displayed both on the operation panel of the ink jet recording apparatus and the display of the host computer.

24. (previously presented): The ink jet recording apparatus as claimed in claim 11, wherein the user guide data is displayed when an ink cartridge is newly mounted and before the ink jet recording head is filled with ink.

25. (previously presented): The ink jet recording apparatus as claimed in claim 11, wherein the user guide data includes contact addresses and telephone numbers of dealers of compatible ink cartridges.

26. (previously presented): The ink jet recording apparatus as claimed in claim 11, wherein the user guide data is displayed both on the operation panel of the ink jet recording apparatus and the display of the host computer.

27. (previously presented): The method of controlling an ink jet recording apparatus of claim 16, wherein the default storage means includes data relating to a print medium feeding speed.

28. (previously presented): The method of controlling an ink jet recording apparatus of claim 18, wherein the user guide data displayed occurs when an ink cartridge is newly mounted and before the ink jet recording head is filled with ink.

29. (previously presented): The method of controlling an ink jet recording apparatus of claim 18, wherein the user guide data includes contact addresses and telephone numbers of dealers of compatible ink cartridges.

30. (previously presented): The method of controlling an ink jet recording apparatus of claim 18, wherein the user guide data is displayed both on the operation panel of the ink jet recording apparatus and the display of the host computer.

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31. (previously presented): The method of assisting a user to determine a compatible cartridge of claim 19, wherein the user guide data displayed occurs when an ink cartridge is newly mounted and before an ink jet recording head is filled with ink.

32. (previously presented): The method of assisting a user to determine a compatible cartridge of claim 19, wherein the user guide data includes contact addresses and telephone numbers of dealers of compatible ink cartridges.

33. (previously presented): The method of assisting a user to determine a compatible cartridge of claim 19, wherein the user guide data is displayed both on the display of the recording apparatus and the display of the host computer.

34. (canceled).

35. (new): The ink jet recording apparatus as claimed in claim 1, wherein after the recording apparatus generates the caution, the recording apparatus does not execute the subsequent print until the user inputs the continuation instruction.

36. (new): An ink jet recording apparatus comprising an ink jet recording head for receiving supply of ink from an ink cartridge provided with storage means storing data for determining compatibility to a recording apparatus, and control means for determining

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compatibility of ink based on the data in the storage means and executing print operation,
wherein

if the ink cartridge is determined as being incompatible, the control means outputs data
used as a guide for determining a compatible ink cartridge,

wherein the control means determines the compatibility of the mounted ink cartridge
based on the data from the storage means when the mounted ink cartridge is to be replaced, and
the control means outputs data for specifying that the mounted ink cartridge is compatible.

37. (new): An ink jet recording apparatus comprising an ink jet recording head for
receiving supply of ink from an ink cartridge provided with storage means storing data for
determining compatibility to a recording apparatus, and control means for determining
compatibility of ink based on the data in the storage means and executing print operation,
wherein

if the ink cartridge is determined as being incompatible, the control means outputs data
used as a guide for determining a compatible ink cartridge,

wherein the data used as a guide is at least one of (1) displayed on an operational panel of
the ink jet recording apparatus and (2) outputted to a display of a host computer, and

wherein the data used as a guide includes data specifying the compatible ink cartridge.

38. (new): A method of assisting a user to determine a compatible cartridge, the
method comprising the steps of:

checking data of a first ink cartridge to determine compatibility of the first ink cartridge;

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outputting data used as a guide for determining a compatible, second ink cartridge if compatibility of the first ink cartridge cannot be determined;

wherein the data used as a guide is at least one of (1) displayed on a display of a host computer and (2) displayed on a display of a recording apparatus, and

wherein the data used as a guide includes data specifying the compatible ink cartridge.

39. (new): An ink jet recording apparatus to which an ink cartridge having storage means is mountable, the storage means has a predetermined format in which information pieces of data items are stored in respective data fields, the recording apparatus comprising:

a recording head to which ink is supplied from the ink cartridge mounted on the recording apparatus;

an optimum drive condition storage section storing an optimum drive condition for an ink cartridge compatible to the recording apparatus;

a general purpose drive condition storage section storing a general-purpose drive condition for an ink cartridge incompatible to the recording apparatus;

a normal setup range storage section storing a normal setup range of at least one data field;

a determination section which compares the information piece corresponding to and read from the at least one data field with the normal setup range, and determines whether the read information piece is reliable or not based on a result of the comparison;

a mode selection section which selects one of an optimum mode using the optimum drive condition and a general-purpose mode using the general-purpose drive condition based on the determination by the determination section;

a drive control section which controls printing by the recording head based on the selected one of the optimum drive mode and the general-purpose drive mode.

40. (new): The recording apparatus according to claim 39, wherein if the read information piece is out of the normal setup range, the determination section determines that the read information is not reliable and the mode selection section selects the general-purpose mode.

41. (new): The recording apparatus according to claim 39, wherein if the read information piece is within the normal setup range, the determination section determines that the read information is reliable and the mode selection section selects the optimum mode.

42. (new): The recording apparatus according to claim 39, wherein if the read information piece is out of the normal setup range, the determination section determines that the mounted ink cartridge is the incompatible ink cartridge.

43. (new): The recording apparatus according to claim 39, wherein the normal setup range storage section stores the normal setup ranges of selected ones of the data fields, and the determination section compares selected ones of the information pieces corresponding to and read from the selected ones of data fields with the normal setup ranges, respectively.

44. (new): The recording apparatus according to claim 43, wherein if at least one of the selected information pieces is out of the corresponding normal setup range, the mode selection section selects the general-purpose mode.

45. (new): The recording apparatus according to claim 43, wherein if all of the selected information pieces are within the corresponding normal setup ranges, the mode selection section selects the optimum mode.

46. (new): The recording apparatus according to claim 39, wherein the data items includes at least two of manufacturing year, manufacturing month, manufacturing day, attachment year, attachment month, attachment day, ink type and color information.

47. (new): The recording apparatus according to claim 39, wherein the data items includes technical information pieces and additional information pieces, and the determination section uses at least one of the technical information pieces for the comparison.

48. (new): The recording apparatus according to claim 39, wherein pressure for ejecting an ink droplet from the recording head is larger in the general-purpose drive condition than in the optimum drive condition.

49. (new): The recording apparatus according to claim 39, wherein recording paper feed speed is lower in the general-purpose drive condition than in the optimum drive condition.

50. (new): The recording apparatus according to claim 43, wherein the general purpose drive condition storage section stores a plurality of the general-purpose drive conditions and the mode selection section selects a general-purpose mode using one of the general-purpose drive conditions depending on how many or what ratio the selected information pieces are out of the respective normal setup ranges.

51. (new): A method of controlling an ink jet recording apparatus comprising an ink jet recording head provided with storage means with a predetermined format in which information pieces of data items are stored in respective data fields storing data for determining compatibility to a recording apparatus, the method comprising:

comparing the information piece corresponding to and read from the at least one data field with a normal setup range,

determining whether the read information piece is reliable or not based on a result of the comparison;

selecting one of an optimum mode using an optimum drive condition and a general-purpose mode using the general-purpose drive condition based on the determination by the determination section;

controlling printing by the recording head based on the selected one of the optimum drive mode and the general-purpose drive mode.